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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/895,025	07/02/2001	Toshiaki Shinohara	210096US2	7453

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EXAMINER

VU, QUANG D

ART UNIT PAPER NUMBER

2811

DATE MAILED: 12/30/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/895,025

Applicant(s)

SHINOHARA, TOSHIAKI

Examiner

Quang D Vu

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on amendment filed on 09/05/03.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 6-10 is/are allowed.
- 6) ☒ Claim(s) 1-5 and 11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 1-5 rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The specification never discloses a ceramic substrate joined directly to the second surface of the metal block as claimed in claim 1. The specification shows a ceramic substrate (6n) joined to the second surface of the metal block (3n) as shown in figure 3.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 3, 4 and 11 are rejected under 35 U.S.C. 102(b) as being anticipated by US Patent No. 5,291,065 to Arai et al.

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Regarding claim 1, Arai et al. (figure 10) teach a semiconductor device comprising:

a semiconductor element (5);

a metal block (330) having a first surface and a second surface opposite to the first surface;

an aluminum wire (5g) having an electrode terminal joined to the first surface of the metal block (330); and

a ceramic substrate (301) joined to the second surface of the metal block (330) and having metal layers (312, 340) formed on both surfaces.

It is inherent that the semiconductor element (5) having an electrode for the I/O connection.

It is inherent that the semiconductor element (5) and the electrode are joined to the first surface of the metal block (330) through a jointing material for the interconnection between the semiconductor element and the external device.

Regarding claim 3, Arai et al. teach the semiconductor element includes a plurality of semiconductor elements (5);

the metal block (330) and the ceramic substrate (301) are separated per insulation unit of at least one of the plurality of semiconductor elements (5);

the metal block (330) is provided to be in correspondence with at least one of the plurality of semiconductor elements (5); and

the ceramic substrate (301) extends over all of the plurality of semiconductor elements (5) for forming the insulation unit.

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Regarding claim 4, Arai et al. inherently teach the metal block (330) includes a surface having a region larger than that of the jointing material, which is in contact with the metal block.

Regarding claim 11, Arai et al. teach the semiconductor element includes a plurality of semiconductor elements (5);

the metal block (330) and the ceramic substrate (301) are separated per insulation unit of at least one of the plurality of semiconductor elements (5);

the ceramic substrate (301) is provided to be in correspondence with at least one of the plurality of semiconductor elements (5); and

the metal block (303) extends over all of the plurality of semiconductor elements (5) for forming the insulation unit.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 5,291,065 to Arai et al.

Regarding claim 2, Arai et al. differ from the claimed invention by not showing the metal layers formed on the both surfaces of the ceramic substrate are the same with each other in thickness. It would have been obvious to one having ordinary skill in the art at the time the invention was made for the metal layers formed on the both surfaces of

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the ceramic substrate are the same with each other in thickness because it depends on the amount of heat that dissipated by the integrated circuit.

Allowable Subject Matter

7. Claims 6-10 are allowed.

Response to Arguments

Applicant's arguments filed 09/05/03 have been fully considered but they are not persuasive.

It is argued, in page 8 of the remarks, that Arai et al. do not teach or suggest a ceramic substrate joined directly to the second surface of the metal block. This argument is not convincing because the claimed limitation “a ceramic substrate joined directly to the second surface of the metal block” never discloses in the specification (figure 3). The specification only discloses a ceramic substrate (6n) joined to the second surface of the metal block (3n). Additionally, there are two more layers of jointing material “10” and metal layer “5n”, which are formed between the metal block (3n) and ceramic substrate (6n). Therefore, a ceramic substrate cannot join directly to the second surface of the metal block.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Quang D Vu whose telephone number is 703-305-3826. The examiner can normally be reached on Monday-Friday.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie Lee can be reached on 703-308-1690. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

qv
December 22, 2003

A handwritten signature in black ink, appearing to read 'Eddie Lee', with a large, sweeping initial 'E'.

EDDIE LEE
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800